Financial Analysis Notes

1. Net present value

a. Determine ROI
b. Provide financial comparison among projects
c. A dollar today is worth more than a dollar tomorrow
d. Certainty is better than uncertainty (e.g., higher risk projects require higher returns)

$$FV = PV\ (1 + r)^t$$

FV = Future Value
PV = Present Value
r = Interest Rate
t = Number Of Time Periods

$$NPV = C_0 + \frac{C_1}{(1+r)} + \frac{C_2}{(1+r)^2} + \frac{C_3}{(1+r)^3} + \frac{C_n}{(1+r)^n}$$

C_0 = upfront expenditure (negative number)
C_1, C_2, C_3….C_n = cash flows in a period
r = cost of capital
$(1+r)^n$ = discounting factor appropriate to time period

e. Requirements for NPV analysis
(1) Upfront cost estimate
- Ignore sunk costs
- Consider opportunity costs
- Consider working capital needs

(2) Free cash flow forecast
Net Income
+ Depreciation
- Increase In Working Capital
- Capital Expenditures
= Free Cash Flow

(3) Cost of capital estimate
(a) Equity Method

$$Rc = Rf + â(Rm - Rf)$$

Rc = Cost of Capital
Rf = Risk Free Rate (e.g., Treasuries)
Rm = Market Rate of Return
Rm - Rf = Market Wide Risk Premium

â = Industry Specific Risk

(Publicly traded healthcare companies, generally riskier than the market as a whole)

(b) Debt Market Method - example:

Investment $1,000,000
Financing 8% Over 30 Years
Annual Debt Service $88K
Reqd Cash Flow@ 2.5% Coverage $220K
Reqd Return On Investment 22%

(c) Risk Analysis Method (Qualitative). Projects classified as high risk, medium risk, or low risk according to the number of factors applicable:
- Project generates market share from a new demographic or geographic market
- Project represents a new product or service
- Project requires new mgmt expertise
- Project requires recruiting highly-skilled, specialized personnel
- Strong competitor is in the target marketplace

(4) Terminal value estimate

(a) No Value
(b) Liquidation Value
(c) Annuity
(d) Perpetuity
(e) Growth Perpetuity

2. IRR

a. Not used very often
b. Assumes all cash flow is reinvested at the IRR - results in an overestimated return
c. Set the NPV = 0. (NPV measures how well the project does against a "hurdle" rate). IRR thus measures the rate of return that the project actually earns.
d. MIRR - Modified Internal Rate of Return
All project's net cash outflows are discounted at the project's cost of capital

3. Risk Adjusted Discounted Cash Flow

a. Measures total cost
b. First discount future cash flows to account for the time value of money, and then adjust those discounted cash flows to reflect potential risk. Quantitatively assess risk via:
(1) Simulation modeling, or
(2) Analytical methods to enable sensitivity analysis, e.g., using a triangular distribution (input high, low and most likely cost values) to estimate the mean and variance of alternative costs
c. Rank alternatives by their potential savings, or rank RADCF values by relative risk of the alternatives under consideration

4. Other Methods not used as often because they do not reflect the value of a dollar today vs. tomorrow.

a. Payback Method - assesses how long it will take to receive enough cash from a project to recover the cash invested
b. Accounting Rate of Return
c. Cost of Funds Method